



AEC-NASA TECH BRIEF



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Fundamental Electrode Kinetics

For a complete understanding of the mechanism involved in any electrode reaction, it is necessary to study electrode kinetics in order to determine the important rate-limiting steps in the overall electrode reaction.

A study was initiated and a report has been prepared which presents the fundamentals of electrode kinetics and the methods used in evaluating the characteristic parameters of rapid-charge transfer processes at electrode-electrolyte interfaces. The modern concept of electrode kinetics is outlined, followed by a consideration of the theoretical principles underlying the experimental techniques for the sophisticated investigation of electrode kinetics.

Complete details are contained in: *Electrode Kinetics*, by John P. Elder, ANL-7072, Argonne National Laboratory, Argonne, Illinois, July 1965. Covered in the report are ohmic, mass-transfer, and charge-transfer overpotential, and the determination of charge-transfer kinetic parameters. Also presented is the theory governing the following experimental techniques: voltametry, including both controlled-potential and controlled-current electrolysis; perturbation-relaxation techniques, including both potentiostatic and galvanostatic methods; and alternating-current methods.

Notes:

1. The report is available from the Clearinghouse for Federal Scientific and Technical Information,

Springfield, Va. 22151; price: \$3.00; microfiche \$0.65.

2. An extensive list of basic references is contained in the report.
3. This study should be useful to those interested in electroplating, electrolytic refining, and fuel cells.
4. Inquiries concerning this innovation may be directed to:

Office of Industrial Cooperation
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439
Reference: B68-10196

Source: J. P. Elder
Chemical Engineering Division
(ARG-10067)

Patent status:

Inquiries about obtaining rights for commercial use of this innovation may be made to:

Mr. George H. Lee, Chief
Chicago Patent Group
U.S. Atomic Energy Commission
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

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